

PATENT CLAIMS

1. (Currently amended) A method for manufacturing a cooling element (1) to be used in the structure of a ~~furnace used in metal processes, such as~~ a flash smelting furnace, a blast furnace, an electric furnace or other metallurgical reactor, said cooling element comprising a copper housing (2) made of one single piece, in which housing there is formed a channel system (3) for the circulation of the cooling medium, lining elements (4) made of fireproof material, said housing and lining element including means for connecting them together, ~~characterized in that~~ the method comprising connecting the lining element (4) and the housing (2) ~~are connected~~ so that the lining element (4) can move in the vertical direction with respect to the housing (2).
2. (Currently amended) A method according to claim 1, ~~characterized in that~~ further comprising in the surface (8) of the housing, arranging ~~there are arranged~~ vertical grooves (5), in which grooves the lining elements (4) are placed.
3. (Currently amended) A method according to claim 1 ~~or 2, characterized in that~~ further comprising in the lining element (4) ~~there is arranged~~ arranging a bracket-like edge part (6) that fits in the groove (5) provided in the housing.
4. (Currently amended) A method according to claim 2 ~~or 3, characterized in that~~ further comprising in the vertical groove (5) arranged on the surface (8) of the housing, ~~there are placed~~ placing lining elements along the whole width of the groove, so that the lining elements are located on top of each other.
5. (Currently amended) A method according to claim 2, ~~3 or 4, characterized in that~~ further comprising narrowing the groove (5) arranged in the housing (2) ~~is narrowed~~ from the groove bottom (7) towards the surface (8) of the housing.

6. (Currently amended) A method according to claim 2, ~~3, 4 or 5, characterized in that~~ wherein the width of the groove bottom (~~7~~) is essentially 55 – 100 millimeters.
7. (Currently amended) A method according to claim 2, ~~3, 4, 5 or 6, characterized in that~~ wherein the width of the groove orifice (~~9~~) is essentially 50 — 95 millimeters.
8. (Currently amended) A method according to claim 2, ~~3, 4, 5, 6 or 7, characterized in that~~ wherein the depth of the groove (~~5~~) is essentially 30 — 60 millimeters.
9. (Currently amended) A method according to ~~any of the claims 2 — 8, characterized in that the~~ Claim 2, further comprising placing the cooling element (~~1~~) ~~is placed~~ in the furnace so that the grooves (~~5~~) are positioned in the vertical direction.
10. (Currently amended) A method according to ~~any of the preceding claims, characterized in that~~ Claim 2, further comprising narrowing the bottom part (~~10~~) of the housing (~~2~~) ~~is narrowed~~ downwards.
11. (Currently amended) A method according to ~~any of the preceding claims, characterized in that~~ Claim 2, further comprising connecting the lining elements (~~4~~) ~~are connected~~ to the housing (~~2~~) before the cooling element is installed in the furnace.
12. (Currently amended) A method according to ~~any of the claims 1 — 10, characterized in that~~ Claim 1, further comprising connecting the lining elements (~~4~~) ~~are connected~~ to the housing (~~2~~) after the housing is 20 installed in the furnace.
13. (Currently amended) A method according to ~~any of the preceding claims, characterized in that~~ Claim 1, further comprising in the depth direction of the cooling element[,], extending the lining elements (~~4~~) ~~extend~~ to outside the housing (~~2~~).
14. (Currently amended) A method according to ~~any of the preceding claims, characterized in that~~ Claim 1, further comprising the lining elements (~~4~~) completely cover

covering with the lining elements that surface (8) of the housing (2) that gets into contact with the melt.

15. (Currently amended) A method according to ~~any of the preceding claims,~~
~~characterized in that~~ Claim 1, further comprising interconnecting the cooling elements (4)
~~are interconnected~~ at the junctions (11) provided in the elements.

16 (Currently amended) A method according to claim 15, ~~characterized in that in~~
further comprising in the auxiliary groove (12) formed at the junction (11) ~~there are placed~~
placing lining elements in the vertical direction.

17. (Currently amended) A cooling element (4) to be used in the structure of ~~a furnace~~
~~used in metal processes, such as~~ a flash smelting furnace, a blast furnace, an electric furnace
or other metallurgical reactor, said cooling element comprising a copper housing (2) made of
one single piece, in which housing there is formed a channel system (3) for the circulation of
the cooling medium, lining elements (4) made of fireproof material, said housing and lining
element including means for connecting them together, ~~characterized in that~~ the lining
element (4) and the housing (2) ~~are~~ being connected so that the lining element (4) is movable
in the vertical direction with respect to the housing (2).

18. (Currently amended) A cooling element according to claim 17, ~~characterized in that~~
wherein on the surface (8) of the housing there are arranged vertical grooves (5), in which the
lining elements (4) are placed.